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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/528,100 | 03/16/2005 | Jonathan James Davies | 05-194 | 5840 |
| 20306 7590 03/02/2007 MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP 300 S. WACKER DRIVE 32ND FLOOR CHICAGO, IL 60606 | | | EXAMINER PIHULIC, DANIEL T | |
| | | | ART UNIT 3662 | PAPER NUMBER |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | | MAIL DATE | DELIVERY MODE |
| 3 MONTHS | | | 03/02/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/528,100

Applicant(s)

DAVIES ET AL.

Examiner

Daniel T. Pihulic

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-27 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>20050720</u> . | 6) <input type="checkbox"/> Other: ____. |

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. The drawings are objected to because the boxes of Figs. 2, 3 and 5 should have descriptive labels in addition to the reference numerals. Correction is required.
3. The disclosure is objected to because of the following informalities: on page 12, line 25, there appears to be an unnecessary period after the word "provide". Appropriate correction is required.
4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 7, 8 and 10 13-18, 20-22 and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by US5659520. The US5659520 reference discloses determining the direction of a source of pulse signals, comprising receiving the same pulse at two spaced receivers (8a-8c, for example) to provide respective first and second outputs, correlating (see column 2, first paragraph, for example) said first and second outputs against each other to

determine the difference in time of arrival (see column 2, second paragraph, for example), and computing and angle relative to the line joining the receivers (see Fig. 2B, for example) from the time difference and the spacing of the receivers as recited in claims 1 and 25.

With regards to claims 2 and 4, the US5659520 reference discloses the utilization of three non-collinear receivers (8a-8c, for example).

With regards to claim 3, the US5659520 reference discloses determining the direction of the target (see column 2, third paragraph, for example).

With regards to claim 7, the US5659520 reference discloses the pulse signal includes at least two pulse waveforms (see column 3, last paragraph, for example).

With regards to claims 8, 26 and 27, the US5659520 reference discloses means for determining Doppler parameters (63, for example).

With regards to claim 10, the US5659520 reference discloses a third pulse waveform (see Fig. 4C, for example).

With regards to claim 15, the US5659520 reference discloses a target unit (9, for example).

With regards to claim 16, the US5659520 reference discloses a pulse signal comprises a pair of temporally spaced pulses (see Fig. 4B, for example).

With regards to claim 17, the US5659520 reference discloses frequency modulated pulse signals (see Fig. 4B, for example).

With regards to claim 18, the US5659520 reference discloses chirp pulse signals (see Fig. 4B, for example).

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With regards to claims 20 and 21, the US5659520 reference discloses digital pulse signals (see Fig. 4B, for example).

With regards to claim 22, the US5659520 reference discloses pulse signals that appear to have good correlation properties (see Fig. 4B, for example).

With regards to claim 24, the US5659520 reference discloses range determining means (see claim 1, for example).

7. Claims 1-3, 5, 6 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by US4198704. The US4198704 reference discloses determining the direction of a source (12) of signals, comprising receiving the signal at two spaced receivers (13a-13c, for example) to provide respective first and second outputs, correlating (19a & 19b, for example) said first and second outputs against each other to determine the difference in time of arrival (see column 10, line 64, for example), and computing an angle relative to the line joining the receivers (see Fig. 1, for example) from the time difference and the spacing of the receivers as recited in claims 1 and 25.

With regards to claim 2, the US4198704 reference discloses the utilization of three receivers (13a-13c, for example).

With regards to claim 3, the US4198704 reference discloses determining the bearing of the target (62, for example).

With regards to claims 5 and 6, the US4198704 reference discloses rotation means (Fig. 5, for example).

8. Claims 1, 11, 12 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by US3978445. The US3978445 reference discloses determining the direction of a source (68) of signals, comprising receiving the signal at two spaced receivers (10, 32 & 50, for example) to provide respective first and second outputs, correlating (28, for example) said first and second outputs against each other to determine the difference in time of arrival (see column 3, last paragraph, for example), and computing an angle relative to the line joining the receivers (30, for example) from the time difference and the spacing of the receivers as recited in claims 1 and 25.

With regards to claim 11, the US3978445 reference discloses the utilization of autocorrelation means (14, 36 & 54, for example).

With regards to claim 12, the US3978445 reference discloses autocorrelation means (14, 36 & 54, for example) provided between said receiving means (10, 32 & 50, for example) and said cross-correlation means (28, for example).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 19 and 23 are rejected under 35 U.S.C. 103 as being unpatentable over US5659520 in as applied to claims 16 and 20 above, and in combination with US6532192. The claims additionally recite the utilization of a Gold code. The US6532192 reference teaches that it was well known in the art to utilize a Gold code. It would have been obvious to modify the US5659520 reference to utilize a Gold code as motivated by the US6532192 reference to enable the US5659520 system to improve performance.

11. Claims 13 and 14 are rejected under 35 U.S.C. 103 as being unpatentable over GB2336741 in combination with US6121927. GB2336741 discloses (figures 1,3, 5; abstract; page 14, line 19 - page 24, line 14) a signal arrival direction finder. A cross-correlation function with time lags of the received signals is obtained by inverse modulating despread output signals by a known symbol in an inverse modulator 8. An arrival direction of a received signal is estimated by an arrival direction estimation unit 6 based on the cross-correlation function. The system of GB2336741 discloses all the features of: receiver means providing temporally output pulses in response to a single received pulse (antennas 1-0, 1-1; despreading units 3-0, 3-1); cross-correlation means for cross-correlating the output pulses (inverse modulator 8; arrival direction estimator 6). The claims additionally recite the utilization of multipath correction. The US6121927 reference discloses (figures 1-8; column 4, line 66 - column 6, line 50) a procedure for computing the bearing of a source from the arrival time differences of the multipath propagated signal. The propagation time difference of each response is set equal to the propagation delay value giving the maximum correlation with a previous estimate of the radio channel impulse response. Therefore, the effect of multiple paths are taken in to account in the

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calculation of the bearing. It would have been obvious the GB2336741 references to utilize a multipath correction as motivated by the US6532192 reference to enable the US5659520 system to improve performance.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pihulic whose telephone number is 571-272-6977. The examiner can normally be reached on Monday and Wednesday through Friday from 5:30 a.m. to 4 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza, can be reached on 571-272-6979.

The fax phone numbers for the organization where this application or proceeding is assigned are: 571-273-8300 for official responses, and

571-273-6977 for unofficial communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 800-786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Daniel T. Pihulic
Primary Examiner
T.C. Art Unit 3662